



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,187	07/31/2007	Toru Kimura	01115_1013	4887
30671	7590	04/19/2010		
DITTHAVONG MORI & STEINER, P.C. 918 Prince Street Alexandria, VA 22314			EXAMINER	
			JOHNSON, CONNIE P	
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
04/19/2010		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@dcpatent.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/586,187	<b>Applicant(s)</b> KIMURA ET AL.
	<b>Examiner</b> CONNIE P. JOHNSON	<b>Art Unit</b> 1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 14 July 2006.

2a) This action is FINAL.      2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-14 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08),  
 Paper No(s)/Mail Date 3/8/2010, 11/26/08, 7/14/06

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date: \_\_\_\_\_

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Status***

1. Claims 1-14 are presented.

***Claim Objections***

2. Claim 7 is objected to because of the following informalities:

The recitation in claim 7, “wherein the divalent hydrocarbon group inserted an alkylene group having 1 to 4 carbon atoms between an alicyclic hydrocarbon group and a bistrifluoromethyl-hydroxy-methyl group” is not clear. Examiner suggests the recitation should read, “wherein the divalent hydrocarbon group, an alkylene group having 1 to 4 carbon atoms, is inserted between an alicyclic hydrocarbon group and a bistrifluoromethyl-hydroxy-methyl group.” Appropriate correction is required.

***Double Patenting***

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010

Art Unit: 1795

(Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-11 and 14 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 5 and 8 of U.S. Patent No. 7,642,034 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because Hatakeyama teaches a resist protecting material comprising a fluorinated polymer that meets the limitations of the present invention.

5. Claims 1-7 and 9-14 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3, 4, 9-15, 19 and 20 of U.S. Patent No. 7,569,323. Although the conflicting claims are not identical, they are not patentably distinct from each other because

Hatakeyama discloses a resist protecting material comprising a polymerizable monomer with the structure in present claim 5.

***Claim Rejections - 35 USC § 102***

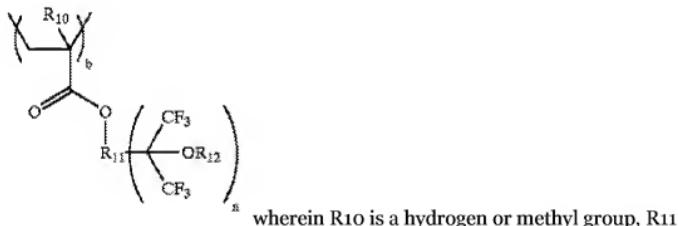
6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-4 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Komoriya et al., U.S. Patent Publication No. 2003/0232940.

Komoriya teaches a polymer with a repeating unit that is representative of the repeating unit in present claims 2-4:



is representative of the R<sub>2</sub> substituent, which is an organic group, R<sub>12</sub> is hydrogen, n=1 and b=1 (page 7, [0072]). The repeating unit has a fluorinated side

chain and a fluorinated alcoholic hydroxyl group. The polymer is used in an antireflective layer on a resist (page 10, [0125]). The recitation in claim 1, “applied to coat on a photoresist film when using an immersion exposure device which is irradiated through water provided between a lens and the photoresist film...and being dissolved in a subsequent developer” is a product by process limitation. Product by process claims are not limited to the manipulations of recited steps, only the structure implied by the steps. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (MPEP 2113). The recitation, “forming a water-stable film during irradiation” is intended use and does not add positive recitation to the claim. The recitation in claim 9, “dissolving an alkaline solution during development using the alkaline aqueous solution” is intended use and does not add positive recitation to the claim. The antireflective layer also comprises a monovalent alcoholic solvent to dissolve the polymer (page 9, [0124]).

8. Claims 1-4 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Li et al., U.S. Patent Publication No. 2005/0266354 A1.

Li teaches a topcoat material on a resist layer wherein the topcoat comprises an alkali-soluble polymer with a repeating unit with the following structure:



(page 5, [XXV]). Formula [XXV] is representative of formula (I) in present claim 5, wherein R1 is a hydrogen and R2 is a 1,2-propylene group. Also, formula (XXX) on page 5 is representative of formula (I), wherein R2 is an alicyclic group. The topcoat also comprises a monovalent alcoholic solvent (page 7, [0023]). The recitation in claim 1, “applied to coat on a photoresist film when using an immersion exposure device which is irradiated through water provided between a lens and the photoresist film...and being dissolved in a subsequent developer” is a product by process limitation. Product by process claims are not limited to the manipulations of recited steps, only the structure implied by the steps. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698,

227 USPQ 964, 966 (Fed. Cir. 1985) (MPEP 2113). The recitation, “forming a water-stable film during irradiation” is intended use and does not add positive recitation to the claim. The recitation in claim 9, “dissolving an alkaline solution during development using the alkaline aqueous solution” is intended use and does not add positive recitation to the claim. The polymer is used in a topcoat film for immersion exposure.

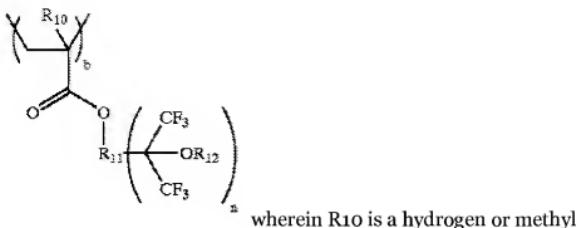
***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 3, 5, 6 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komoriya et al., U.S. Patent Publication No. 2003/0232940 A1.

Komoriya teaches a polymer with a repeating unit that is representative of present claim 5:

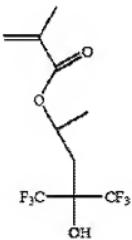


group, R<sub>11</sub> is representative of the R<sub>2</sub> substituent, which is an organic group, R<sub>12</sub> is hydrogen, n=1 and b=1 (page 7, [0072]). With regards to present claim 6, the R<sub>11</sub> substituent is a divalent hydrocarbon. The repeating unit comprises a carboxyl group (claim 10) and an alcoholic hydroxyl group on the side chain containing a fluoroalkyl group on at least the carbon atom of  $\alpha$ -position (claim 11). The recitation in claim 1, “applied to coat on a photoresist film when using an immersion exposure device which is irradiated through water provided between a lens and the photoresist film...and being dissolved in a subsequent developer” is a product by process limitation. Product by process claims are not limited to the manipulations of recited steps, only the structure implied by the steps. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (MPEP 2113). The recitation, “forming a water-stable film during

"irradiation" is intended use and does not add positive recitation to the claim. The polymer is used in an antireflective layer over a resist and also comprises a solvent (page 10, [0125]), such as propylene glycol which has 6 carbons (page 9, [0124]) (claim 12). Although not exemplified over other solvents, it would have been obvious to one of ordinary skill in the art to use propylene glycol with reasonable expectation of dissolving the polymer in the antireflective film.

11. Claims 1, 3, 5 and 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al., U.S. Patent Publication No. 2005/0266354 A1.

Li teaches a topcoat material on a resist layer wherein the topcoat comprises an alkali-soluble polymer with a repeating unit with the following structure:



(page 5, [XXV]). Formula [XXV] is representative

of formula (I) in present claim 5, wherein R<sub>1</sub> is a hydrogen and R<sub>2</sub> is a 1,2-propylene group (claim 8). Also, formula (XXX) on page 5 is representative of formula (I), wherein R<sub>2</sub> is an alicyclic group (claim 7). The topcoat also comprises a solvent, such as 1-butanol and 1-propanol (page 7, [0023]) (claims 12 and 13). The recitation in claim 1, "applied to coat on a photoresist film when using an immersion exposure device which is irradiated through water provided

between a lens and the photoresist film...and being dissolved in a subsequent developer" is a product by process limitation. Product by process claims are not limited to the manipulations of recited steps, only the structure implied by the steps. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (MPEP 2113). The recitation, "forming a water-stable film during irradiation" is intended use and does not add positive recitation to the claim. The method of forming a patterned layer comprises applying a photoresist layer on the substrate, applying a topcoat layer on the photoresist, patternwise exposing the coated substrate through a mask pattern and developing with an aqueous alkali solution wherein the topcoat and a portion of the photoresist are removed simultaneously to form a patterned resist layer (page 7, [0027-0028]) (claim 14). The photoresist is immersion exposed with water as the immersion solvent (page 7, [0025]). Li does not teach formulas (XXV) and (XXX) over other repeating units in the polymer. However, it would have been obvious to one of ordinary skill in the art to choose formulas (XXV) and (XXX) as repeating units in the polymer of the topcoat with reasonable expectation of forming a topcoat that is alkali-soluble and suitable for 193nm immersion lithography.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CONNIE P. JOHNSON whose telephone number is (571)272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Connie P. Johnson  
Examiner  
Art Unit 1795

/Cynthia H Kelly/  
Supervisory Patent Examiner, Art Unit 1795